

Gerardia thus approaches *Antipathes* and *Leiopathes*; but the number in those genera, never exceeding six, separates it from them generically. The cavity of the body displays the same number of radiating folds, analogous to those of the polypes of other Corals.

A very abundant vascular network occupies the whole of the sarcosoma, and opens into the body-cavities of the polypes, which thus communicate with each other. A similar condition was already known to occur in the Alcyonaria, but has not previously been indicated in other groups of Corals. It leads us to suppose that an analogous arrangement exists in all the species living in colonies—that is to say, forming a zoanthodema.

The sarcosoma secretes a viscous and plastic fluid capable of agglutinating all small bodies which come into contact with it. Thus we find on the surface of *Gerardia* grains of sand and spicules of *Bebryces*, *Muriceæ*, *Gorgonia*, and Sponges which live beside it. It is to this, no doubt, that we must refer for the origin of Haime's opinion that his *Leiopathes Lamarcki* was a spiculigerous Antipatharian.

The reproductive organs are developed in the thickness of the radiating folds, behind the convoluted filaments, precisely as in the *Actiniæ*. The sexes are most commonly borne upon distinct polyparies; nevertheless both male and female polypes may be met with in the same colony. I have not seen any hermaphrodite polypes, but it would not be surprising if such should exist.

In the form of its polypes *Gerardia* much more closely resembles the Actiniadæ than the Alcyonaria. This approximation, established by Dana for two species of *Antipathes*, and accepted by Milne-Edwards and Haime, is therefore confirmed in this case by a minute investigation which cannot leave room for any doubt; for *Gerardia* is much more nearly related to the Zoantharia than *Antipathes*.

XXVII.—*Descriptions of new Species of Fluviatile and Terrestrial Operculate Mollusca from Trinidad.* By R. J. LECHMERE GUPPY.

§ 1. *Fluviatile Species.*

Ampullaria purpurascens, n. sp.

Shell ovate, narrowly perforate, rather thin, subopaque, simply horn-coloured, or purplish with numerous indistinct darker purple bands; striated by close lines of growth, which are crossed at right angles by more distant, interrupted, low,

spiral ridges; epidermis pale olive or horn-colour, closely covered with minute striæ; whorls 6, convex above, the last rather flat laterally; suture well impressed; spire convex-conic; aperture narrow, ovate; peristome acute, its margins joined by a thin callus spread over the penultimate whorl; right margin slightly reflected, columellar margin white, expanded and reflected over the narrow umbilicus. Operculum ovate, horn-coloured, concentrically striate; nucleus near the sinuate inner margin. Height 2 inches, greatest breadth 1.4 inches.

The *animal* is nearly black, with a very long siphon. It bears a close resemblance to the animal of *A. guianensis*. The present species is rarely found in a state of perfection: those occurring in ponds are usually dwarfed and distorted.

The present shell differs from *A. Chemnitzii*, which it somewhat resembles, in its greater height of spire and in the narrower and more ovate form of the shell. The aperture also is narrower, and the peristome less expanded.

There is an *Ampullaria* to be found in some parts of Trinidad which seems to be a variety of *A. effusa*, Chemn. (*A. glauca*, Linn.), with a tall spire. It presents the same variations of colour as *A. effusa*, some examples being zoned with dark bands, and others being simply of a brownish olive without colour-bands.

Ampullaria effusa is found existing in many of the streams of the island. Its eggs are deposited, in masses of fifteen or twenty, on trees or rocks just out of the water. They are of a bright green colour; but when the young mollusks come forth, the calcareous covering of the eggs remains of a white colour. The young mollusk has a shell of $2\frac{1}{2}$ whorls, nearly similar to that of the adult, but quite imperforate.

Bithinia spiralis, n. sp.

Shell small, oblong-conic, imperforate, dark reddish brown, smooth, spirally striate, or ornamented on the upper part of the whorls with a keel bearing a regular series of somewhat aculeate rather moniliform projections, giving to the whorls a sharply angulate appearance, and disappearing on the last whorl; whorls six, little convex, gradually increasing, the last forming nearly half the shell; apex conic, sharp; aperture perpendicular, ovate; peristome simple, acute, the margins joined by a thin callus spread over the penultimate whorl; columellar margin narrow. Operculum thin, horny. Height 0.18 inch, greatest breadth 0.11 inch.

The *animal* has a long, divided muzzle, at the base of which

are the two tentacles with the eyes close behind them. The foot is produced in front into two acute lobes.

It may seem strange that so much variation should exist in a single species—from a shell with smooth whorls to one with whorls bearing a keel ornamented with aculeate projections; but there does not exist in my mind the smallest doubt of the different forms belonging to the same species. All the forms are found existing together in the streams of northern Trinidad.

Valvata agglutinans, n. sp.

Shell trochiform-depressed, perforate, entirely composed of numerous minute grains of mineral matter; whorls 3-4, almost carinate, flattened beneath; umbilicus circular; aperture very oblique, circular, the margins shortly united on the penultimate whorl; peristome simple, irregular. Height 0·1 inch, greatest breadth 0·17 inch.

This very curious little *Valvata* makes its shell almost entirely of minute particles of quartz and mica, the cementing material being very limited in amount. It lives on the surface of rocks and stones in the hill-streams of the northern part of Trinidad.

§ 2. *Terrestrial Species.*

Cyclotus trinitensis, n. sp.

Shell depressed, turbinate, rather thick, white under a pale-brown epidermis, with fine wavy lines of growth, and sometimes with obsolete white or chestnut bands; spire somewhat acuminate; whorls 5, convex; umbilicus broad and open; aperture slightly oblique, nearly circular; peristome blunt, its margins forming an angle above; right margin slightly sinuate. Operculum concave, with six obliquely striate whorls, the inner margins of which are raised. Height 0·55 inch, greatest breadth 0·9 inch.

The *animal* is of a pinkish colour, which is most pronounced about the tentacles. The eyes are small and black. The mouth is provided with an amber-coloured, somewhat triangular mandible, divided into two parts by a median fissure, from which diverge slightly curved rows of minute denticulations strongly resembling the lingual teeth of some *Helicidæ*.

The lingual teeth are 3.1.3, in arched rows: central broad, tridentate; 1st lateral broad, bidentate, with a base much produced outwardly; 2nd tridentate; 3rd much hooked and reflexed, tridentate. This dentition is very like that of *Cyclophorus Tuba* (Gray, Syst. Dist. Moll. p. 78).

This species is readily distinguished from *C. jamaicensis* by its light colour and by the absence of any ridge round the um-

bilicus. It is not a common shell on the main island of Trinidad; but it is found in abundance on one of the rocky islets of the group called the Coloras, or Five Islands, in the Gulf of Paria. In aged examples the epidermis is frequently quite wanting, and the aperture is much thickened and wrinkled.

Cyclotus rugatus, n. sp.

Shell depressed-turbinate, with a strong reddish-brown epidermis, zoned with several narrow, obsolete lighter bands, and closely covered with fine angular wrinkles, which almost disappear at the aperture; spire short, depressed; whorls 4, rather flattened above, convex and rounded beneath; umbilicus broadly open; aperture nearly vertical, circular, with a slight angle above; peristome straight, blunt, its margins joined into an angle, right margin not sinuate. Operculum testaceous, and concave externally, internally cartilaginous, with about seven narrow obliquely striated whorls, the inner margins of which are raised. Height 0·4 inch, greatest breadth 0·7 inch.

The *animal* of *C. rugatus* is of a pink colour, strongest about the tentacles. The lingual teeth do not present any remarkable differences from those of *C. trinitensis*, except that the outer laterals are bidentate (not tridentate), thus more closely approaching *Cyclophorus Tuba*.

This very distinct species is found among the northern hills of Trinidad, ranging to an altitude of 2500 feet. It has fewer whorls, a much more depressed spire, and an operculum with narrower and more numerous whorls than *C. trinitensis*; and in the angularly wrinkled character of its epidermis it approaches *C. corrugatus*.

Adamsiella aripensis, n. sp.

Shell oblong-turreted, narrowly perforate, scarcely truncate, rather thin, crowdedly folded longitudinally, dark reddish brown, often with several darker interrupted bands, and about three spiral ridges round the narrow umbilicus; spire regularly tapering, scarcely truncate; suture deep, simple; whorls remaining 6, convex, enlarging gradually; aperture vertical, ovate; peristome orange or pale, double, concentrically striate, dilated above; inner edge waved, rather emarginate on the penultimate whorl; outer edge slightly waved. Operculum ovate, rather cartilaginous, with about four gradually enlarging whorls, the outer edge of which is detached. Length 0·65 inch, greatest breadth 0·3 inch.

This handsome species is found on the Cerros of Aripo, in the northern hills of Trinidad, at an elevation of from 2000 to

2700 feet. The *animal* has a rather elongate grooved foot. Lingual teeth 00.2.1.2.00: central tooth broad, simple; inner lateral broad; outer lateral broad, denticulated on the reflexed edge; uncini numerous, slender, curved at the tip. The lingual dentition is thus shown to differ considerably from that of *Cyclophorus*. While the central and lateral teeth present a certain resemblance to those of *Cyclophorus*, the uncini remind one of *Trochus*, *Nerita*, and especially *Helicina*. The teeth of *Adamsiella aripensis* also resemble those of *Cistula pupiformis*, which I have examined; but in the latter there are no uncini.

The shell of the present species is occasionally found without its spire having suffered the usual slight truncation.

Helicina zonata, n. sp.

Shell subglobose-conic, thin, smooth, whitish, bright straw-coloured or pinkish; suture with a chestnut or red band which becomes quite obsolete on the last whorl, and sometimes a broader yellow or pinkish band on the last whorl; spire conic, mucronate; apex deep red; whorls 5, convex, rather carinate, flattened beneath; aperture oblique; columella terminating in an indistinct knot dilated backwards into a thin circumscribed callus; peristome thin, white, expanded and reflected. Operculum rather shelly, deep blood-red, except at the nucleus and extreme margin, which are horn-coloured diaphanous. Height 0.27 inch, greatest breadth 0.42 inch.

Lingual teeth 00.3.1.3.00: central subquadrate, narrowed at the base; 1st lateral subopaque, subtrapeziform, with the outer corner much produced; 2nd lateral subopaque, elongate, strongly curved outwardly; 3rd lateral broad, convex, glossy, denticulate on the reflexed edge; uncini numerous, slender, with the curved tips finely denticulate. The peculiarities of the lingual dentition of *Helicina* would seem to have been overlooked. The numerous uncini and the subopaque trapeziform laterals remind us strongly of *Nerita*, and would seem to give some support to the idea of the close relationship of these genera—an idea which is further supported by the resemblance of the shells of the two genera.

Helicina barbata, n. sp.

Shell globose-turbinata, thin, smooth, zoned with about three chestnut or red bands, covered with a hairy periostraca; spire depressed-conic; whorls 5, convex, flattened beneath; aperture oblique, semilunar; columella terminating in an indistinct knot dilated backwards into a thin callus; peristome narrowly expanded; right margin slightly sinuate above. Operculum thin, concave, pale, diaphanous, blood-red towards

the outer margin. Height 0·2 inch, greatest breadth 0·32 inch.

This shell resembles *H. pudica*, Drouet, in shape, but is much larger. It is also distinguished by the bands of colour. It is, with *Achatina octona*, the commonest of land shells in Trinidad, and it is the only species of mollusk I have ever observed on the guava (*Psidium pomiferum*), a plant which is shunned by most animals on account of its strong aromatic taste and smell.

The foot of the *animal* is acutely pointed behind; the eyes quite sessile on the outer side of the tentacles, which are long and obtusely pointed. The hairy periostraca of the shell readily comes off, and is rarely seen in cabinet examples.

The lingual dentition is 00.3.1.3.00. The lingual teeth of this species closely resemble those of *H. zonata*, which I have already described; but in *H. barbata* the two inner laterals are glassy and pellucid. The central tooth is broader, and seems to be divided longitudinally. The minute slender uncini are probably about fifty, becoming almost indistinguishable towards the edges of the dental band.

It is my intention to forward to the British Museum the types of the species here described so soon as this communication shall have been made public.

Port of Spain, Trinidad.
August 2, 1864.

XXVIII.—On the Asserted Occurrence of Flint Knives under a Skull of the extinct *Rhinoceros hemitacchus*, in an Ossiferous Cave in the Peninsula of Gower. By H. FALCONER, F.R.S., &c.

To the Editors of the *Annals of Natural History*.

GENTLEMEN,

In the important memoir by MM. Lartet and H. Christy, on the Ossiferous Caves of the Périgord, a statement occurs on the above head which demands correction by me. After commenting on the proofs of the co-existence of Man with certain extinct species, such as *Elephas primigenius*, *Rhinoceros tichorhinus*, &c., M. Lartet adds the following passage:—

“Cette hypothèse de la contemporanéité humaine s’étendrait même à une autre espèce d’éléphant (*E. antiquus*, Falc.) dont l’extinction est réputée plus ancienne encore. Les restes de cet éléphant ont été recueillis, en France, à Saint-Roch, près Amiens, à Clichy, près Paris, et à Viry-Nouveau (Aisne), dans des assises diluviennes ou quaternaires renfermant aussi des silex taillés de main d’homme. On n’a pas, que nous sachions, encore observé